Annals of Clinical and Analytical Medicine
Case Report

Bladder hemangiomas: A rare cause of persistent gross hematuria in children

Veysel Kaplanoğlu[1], Hatice Kaplanoğlu[2], Emin Taha Keskin[3]
[1] Department of Radiology, Health Sciences University, Ankara Ataturk Sanatory Educatıon and Research Hospıtal, Ankara
[2] Department of Radiology, Health Sciences University, Dışkapı Yıldırım Beyazıt Training and Research Hospital, Ankara
[3] Department of Urology, Başakşehir Çam and Sakura City Hospital, Istanbul, Turkey

Abstract
Hemangiomas are benign vascular tumors that can occur almost anywhere in the human body. A bladder hemangioma is rare, constituting only 0.6% of all bladder tumors. It is less common in childhood and adolescence. Its treatment is controversial due to the risk of bleeding. An 11-year-old male patient presented with persistent gross hematuria and pelvic pain. Cystoscopy revealed fibrotic bands in the bladder and hemangioma areas that were raised from the mucosa and not raised from the surface at the junction of the left lateral wall of the bladder dome and on the left side of the bladder neck. Endovascular embolization was performed with polyvinyl alcohol particles. During follow-up in the last year, no local recurrence was observed, and there was no hematuria according to the urinalysis. It is very important to distinguish bladder hemangiomas from other malignant vascular tumors since the required treatment approach and prognosis significantly differ.

Keywords
Bladder Hemangioma, Children, Ultrasonography, CT, MRI

DOI: 10.4328/ACAM.21161 Received: 2022-03-23 Accepted: 2022-06-06 Published Online: 2022-06-08 Printed: 2022-10-20 Ann Clin Anal Med 2022;13(Suppl. 2):S138-140
Corresponding Author: Veysel Kaplanoğlu, Department of Radiology, Health Sciences University, Keçiören Training and Research Hospital, Ankara, Turkey.
E-mail: hatice.altnkaynak@yahoo.com.tr P: +90 0505 892 30 61
Corresponding Author ORCID ID: https://orcid.org/0000-0002-1376-0469

Introduction

Hemangiomas are benign vascular tumors. They can be seen everywhere in the human body and are mostly localized in the skin and subcutaneous soft tissues.

Infection, trauma, metabolic diseases, autoimmune diseases and glomerulonephropathies are the main causes of gross hematuria in children [1]. Neoplasms in the urinary system in children are not common due to the lower incidence of epithelial tumors [1]. Bladder hemangiomas (BH) are rarely reported [1]. In this case report, we defined multiple BH as a rare cause of pediatric persistent gross hematuria and presented imaging findings.

Case Report

A four-year-old boy was diagnosed with BH in an external center based on the presence of gross hematuria with clots, and a partial cystectomy was performed. The patient was not followed up. When he was 11 years, he presented to the pediatrics and urology clinic of our hospital with persistent gross hematuria and pain in the pelvic region. In urinary ultrasonography, numerous heterogeneous hyperechoic lesions were detected, which impacted the bladder wall (BW) and protruded toward the lumen. The largest of these lesions was approximately 37x20 mm and located on the left lateral wall in the anterior inferior section. On color Doppler (superb microvascular imaging), these lesions were observed as a mass with minimal blood flow, containing anechoic vascular areas in the center (Figure 1).

Computed tomography revealed heterogeneous hyperdense lesions protruding from the BW to the lumen and containing irregularly shaped hypodense areas (Figure 2).

Magnetic resonance imaging (MRI) showed lobule-contoured heterogeneous hyperintense lesions protruding from the BW to the lumen, prominent in the anterior left lateral wall and trigone, containing hypointense areas on T1-weighted and T2-weighted images, occasionally showing minimal diffusion restriction, and demonstrating heterogeneous contrast enhancement after contrast agent injection with a gradual increase in enhancement (Figure 3).

In cystoscopy, fibrotic bands were observed in the bladder, and there were hemangioma areas that are raised at the mucosa and not raised at the surface at the junction of the bladder left lateral wall dome and the bladder neck on the left side. The patient underwent endovascular embolization with PVA particles. In the postoperative pelvic US examination, it was observed that intraluminal lesions located in the bladder lumen had decreased in size. The patient was followed up with repeated cystoscopy and abdominal CT at six-month intervals. No local recurrence was observed in the last-year follow-up, and there was no hematuria in the urinalysis. Informed consent was obtained from the patient's relative.

Discussion

BH are benign congenital malformations of vascular structures. Non-urothelial neoplasms are clinically extremely rare and constitute only 0.6% of all bladder tumors [2]. BH can be seen in all age groups, it is less common in children and adolescents. It is most common under 30 years of age [2]. Most BH are

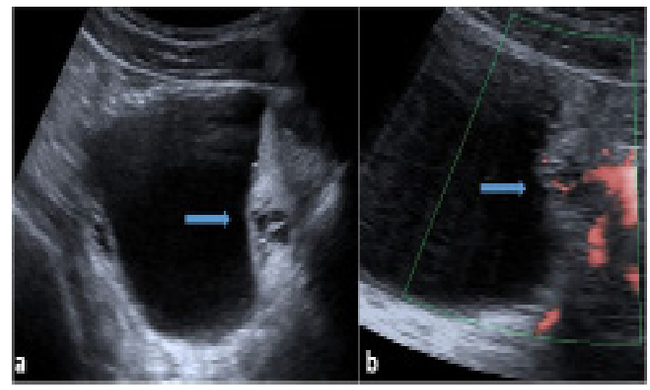

Figure 1. a. B-mode ultrasonography and b. color Doppler (superb microvascular imaging) images showing multiple heterogeneous hyperechoic lesions with lobulated contours, protruding from the bladder wall to the lumen, with minimal blood supply and anechoic vascular areas located in the center (arrow).

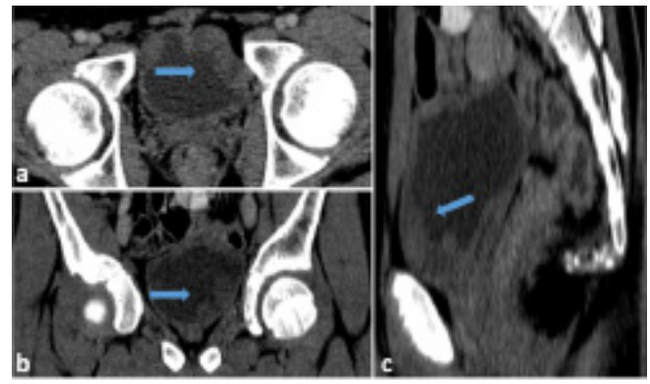

Figure 2. a. Axial, b. Coronal and c. Sagittal computed tomography images revealing heterogeneous hyperdense lesions containing hypodense areas, protruding from the bladder wall to the lumen, and showing minimal contrast enhancement in places (arrow).

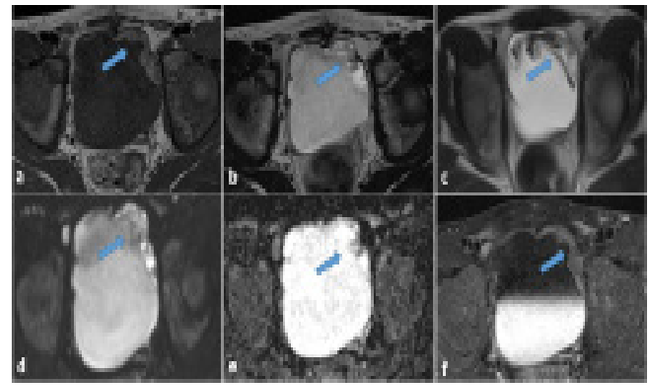

Figure 3. a. T1-weighted, b. T2-weighted, c. T2-Single shot T2 weighted FSE, d. diffusion-weighted, e. Apparent diffusion coefficient and f. contrast-enhanced FS MRI images revealing lobule-contoured heterogeneous hyperintense lesions containing hypointense areas, protruding from the bladder wall to the lumen and showing minimal diffusion restriction in places and heterogeneous contrast enhancement

solitary (66%), most commonly seen in the dome, posterior wall, and bladder trigon. Since its diameter ranges from a few millimeters to 10 cm, it increases the diagnostic difficulties of the intramural tumors of the bladder [2].

The most common clinical symptom of a BH is painless recurrent isolated gross macroscopic hematuria and less commonly suprapubic pain due to vesical irritation and urinary retention. However, in cases with massive bleeding, hypovolemic shock may occur [2, 3]. Ureteral obstruction by the mass can cause hydroureteronephrosis, and in the presence of massive bleeding, the hematoma may hide the mass in the bladder [2].

Most cases reported that BH (3-6%) may be associated with cutaneous hemangioma or Klippel-Trènaunay-Weber syndrome [4]. A bladder hemangioma may also be associated with Sturge-Weber syndrome or encephalo-trigeminal-angiomatosis, Osler-Weber-Rendu disease, hemorrhagic telangiectasia syndrome, and systemic angiomatosis [2, 4]. In addition, 30% of BH are accompanied by hemangiomas in other parts of the body [1]; therefore systemic evaluation is strongly recommended in these patients [4]. In the current case, no other accompanying hemangioma was observed in the body. Of the three characterized histological subtypes of hemangioma, the cavernous form is the most common, followed by capillary and arteriovenous subtypes [1].

Differential diagnosis of children with painless gross hematuria with a polypoid bladder mass includes hemangioma, rhabdomyosarcoma (RMS), other vascular tumors, inflammatory pseudotumor, leiomyoma, neurofibromatosis, pheochromocytoma, transitional cell papilloma, transitional cell carcinoma, and pseudotumoral cystitis. The most common tumor originating from the bladder is RMS, and it is observed as a polypoid mass. Other vascular tumors of the bladder can also cause hematuria, but are rare in children [5]. The inflammatory pseudotumor of the bladder usually presents as a polypoid mass or a submucosal nodule with ulceration and bleeding [6].

Treatment options for bladder hemangiomas vary from one individual to another with appropriate follow-up. The size, localization and depth of the mass are important in the treatment of BH, and its treatment is controversial [7]. For small lesions (≤3 cm) and asymptomatic hemangiomas, follow-up is s recommended. Surgical treatment should be considered in life-threatening conditions such as severe abdominal pain, severe hematuria causing anemia, and suspected malignancy [7]. Treatment options are follow-up, transurethral resection, electrocoagulation, radiation, systemic steroid administration, endovascular embolization, sclerosing agent injection, interferon-a-2 therapy, YAG-laser therapy, and partial or radical cystectomy [8]. Transurethral endoscopic surgical resection is the gold standard in the diagnosis and treatment of small BH. Follow-up is mandatory to detect recurrence or residual tissue after treatment [7].

Conclusion: Bladder hemangiomas are benign, non-urothelial tumors that are rarely seen in pediatric and adolescent patients. There is no pathognomonic finding in clinical presentation, but painless gross hematuria is the most common complaint. It is very important to distinguish bladder hemangiomas from other malignant vascular tumors since the required treatment approach and prognosis significantly differ. Treatment options vary on a case basis and are individualized. Pre-treatment follow-up is necessary for small and asymptomatic lesions, and post-treatment follow-up is mandatory for the detection of recurrence or residual disease.

Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

Animal and human rights statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.

Conflict of interest

None of the authors received any type of financial support that could be considered potential conflict of interest regarding the manuscript or its submission.

References

1. Kim YY, Kim MJ, Lee MJ, Kim JY. Multiple hemangiomas of the urinary bladder in a child with gross hematuria. Ultrasonography. 2015;34 (3):231-4.

2. Zhao GC, Ke CX. Haemangiomas in the urinary bladder: Two case reports. World J Clin Cases. 2021;9 (16):3927-35.

3. Saribacak A, Ozkurkcugil C, Ozkan L. Arteriovenous hemangioma of the urinary bladder following intra vesical treatment. Urol J. 2011;8(3):251-3.

4. Favorito LA. Vesical hemangioma in patient with Klippel-Trenaunay-Weber Syndrome. Int Braz J Urol. 2003;29 (2):149-50.

5. Geramizadeh B, Banani A, Foroutan H, Aminsharifi A, Karimi M. Malignant epithelioid hemangioendothelioma of the bladder: the first case report in a child. J Pediatr Surg 2009;44(7):1443-45.

6. Asanuma H, Nakai H, Shishido S, Tajima E, Kawamura T, Morikawa Y, et al. Inflammatory pseudotumor of the bladder in neonates. Int J Urol. 2000;7(11):421-4.

7. Jibhkate S, Sanklecha V, Valand A. Urinary bladder hemangioma -a rare urinary bladder tumor in a child. APSP J Case Rep. 2015;6(1):6.

8. Syu SH, Chan KS, Hsiao CH, Chen WY, Lee LM, Wen YC. A Large Urinary Bladder Hemangioma Mimicking Urachal Cancer: A Case Report and Literature Review. Urology. 2019;123:224–6.

How to cite this article:

Veysel Kaplanoğlu, Hatice Kaplanoğlu, Emin Taha Keskin. *Bladder hemangiomas: A rare cause of persistent gross hematuria in children. Ann Clin Anal Med 2022;13(Suppl. 2):S138-140*